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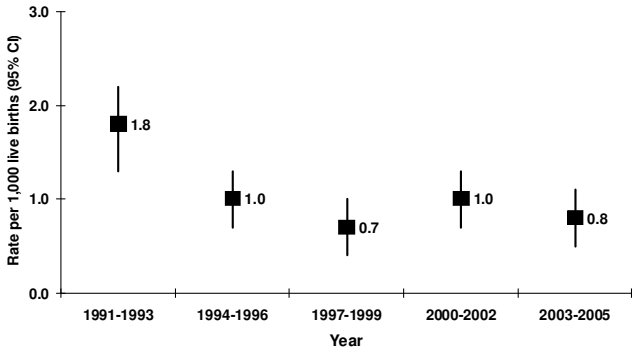
PREVENTION OPPORTUNITIES UNDER THE BIG SKY

## SIDS in Montana, 1990-2005: Smoking in Pregnancy is a Preventable Risk

Sudden Infant Death Syndrome (SIDS) is defined as the death of an infant under one year of age, which remains unexplained after a thorough case investigation, including an autopsy, examination of the death scene, and a review of the clinical history.[1] Although the cause of SIDS is unknown, risk factors include pre and postnatal exposure to tobacco smoke, sleeping in the prone or side position, bed sharing, sleeping on soft surfaces and loose bedding, and hyperthermia. In 1992, the American Academy of Pediatrics issued SIDS prevention recommendations, and in 1994 the U.S. Public Health Service implemented a public education campaign "Back to Sleep" to address this important public health issue. From 1992 to 1999 the incidence of SIDS in the U.S. declined more than 40% from 1.2 to 0.6 per 1,000 live births.[1] This report uses data from linked Montana birth and death records to describe the incidence of SIDS and the risk factors associated with SIDS between 1990 and 2003.

**SIDS Incidence in Montana:** Montana death records from 1990 through 2005 were used to identify cases coded as SIDS (ICD-9 code 798.0, ICD-10 code R95), recognizing that the SIDS definition[1] may not have been strictly applied in each case. The 209 cases identified for 1990-2003 were used to assess risk characteristics associated with SIDS. Of these cases, 195 (93%) were matched to the birth record. Between 1990 and 2003, there were 168,943 live births to Montana residents. The incidence of SIDS for this time period was 1.0 per 1,000 live births (95% CI 1.0-1.3). The three-year incidence of SIDS in Montana declined significantly from 1.8 per 1,000 live births between 1991 and 1993 (61 SIDS deaths) to 1.0 from 1994 to 1996 (33 SIDS deaths). (Figure 1) The incidence has remained between 0.7 and 1.0 per 1,000 live births since then.

**Figure 1. Incidence of Sudden Infant Death Syndrome, Montana, 1991 to 2005.**



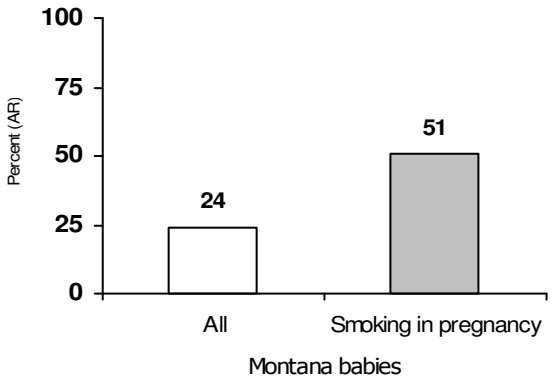

**Risk Factors for Sudden Infant Death Syndrome:** The incidence of SIDS per 1,000 live births [95% CI] was significantly higher in mothers <25 years old (1.6 [1.3-1.9]) compared to mothers ≥25 years (0.8 [0.6-0.9]); American Indians (2.2 [1.5-2.8]) compared to whites (1.0 [0.9-1.2]); mothers with <12 years of education (2.0 [1.5-2.6]), and mothers with 12 years of education (1.4 [1.1-1.7]) compared to mothers with >12 years of education (0.7 [0.5-0.9]); unmarried mothers (1.8 [1.5-2.2]) compared with married mothers (0.9 [0.7-1.1]); male infants (1.4 [1.2-1.7]) compared to female infants (0.9 [0.7-1.1]); alcohol use during pregnancy (2.8 [1.3-4.3]) compared to no use during pregnancy (1.1 [0.9-1.2]); smoking during pregnancy (2.3 [1.8-2.8]) compared to no smoking during pregnancy (0.9 [0.7-1.0]); births <37 weeks gestation (2.4 [2.0-3.2]) compared to full term births (1.0 [0.9-1.2]); birth weight <2500 grams (2.9 [1.9-3.9]) compared to normal birth weight (1.0 [0.9-1.2]); <11 prenatal visits (1.5 [1.2-1.8]) compared to ≥11 prenatal visits (0.9 [0.7-1.1]); and infants born between 1989 and 1993 (1.7 [1.3-2.0]) compared to infants born between 1994 and 1998 (0.9 [0.6-1.2]), and 1999 to 2003 (0.9 [0.6-1.1]).

Multiple logistic regression analyses were used to assess the effect of each characteristic on the association with SIDS. The time period 1990 to 1993 (Adjusted Odds Ratio 2.0, 95% CI 1.4-2.8) and smoking during pregnancy (AOR 1.9, 95% CI 1.4-2.6) were the strongest factors independently associated with SIDS. Maternal age <25 years old (AOR 1.7, 95% CI 1.2-2.3), male infant (AOR 1.6, 95% CI 1.2-2.1), and birth weight <2500 grams (AOR 1.8, 95% CI 1.0-3.1) were also independently associated with SIDS.

**Attributable Risk of SIDS from Smoking:** The prevalence of smoking during pregnancy was significantly higher among mothers with an infant that died from SIDS (38%) compared to mothers with an infant that did not die from SIDS (19%). Approximately one fourth of SIDS cases among Montana babies and over half of the cases among babies whose mother smoked during pregnancy were attributable to smoking

in pregnancy (Figure 2). These attributable risks are very similar to those reported in Georgia babies from 1997 to 2000.[2]

**Figure 2. Attributable risk (AR) of SIDS among all babies and babies of women who smoked during pregnancy, Montana, 1990-2003.**




## Can the Number of SIDS Deaths be Reduced Further?

A striking prevention opportunity exists. Despite a decline in the SIDS death rate in Montana since 1989, the Montana rate remains higher than the national rate. In the U.S. about 10% of women smoke during pregnancy[3]; in Montana the prevalence of smoking during pregnancy is twice as high.

The American Academy of Pediatrics recommends strategies to reduce deaths from SIDS (see below).[4] Helping pregnant mothers and their partners quit using tobacco during the prenatal and postnatal periods is especially important to emphasize in Montana.

**Recommendation: What health care providers can do to help mothers and caregivers decrease the risk of Sudden Infant Death Syndrome?** (complete AAP recommendations, see reference 4)

- Counsel mothers/caregivers regarding the appropriate sleep position for infants, avoid loose bedding and pillows, and avoid over-bundling infants or over-heating rooms causing hyperthermia
- Counsel mothers/caregivers regarding sleeping in the same room as the infant
- Counsel and support mothers/caregivers to quit using tobacco before, during and after pregnancy, and not to allow the infant to be exposed to secondhand smoke
- Refer mothers/caregivers using tobacco to the Montana Tobacco Quit Line 866-485-QUIT

For more information about the Quit Line, free patient education materials, and fax referral forms, contact Stacy Campbell at 406-444-3138 (stcampbell@mt.gov).

For educational materials on SIDS, including materials regarding the “Back to Sleep” campaign, contact Julie Chaffee at the Montana Fetal, Infant, and Child Mortality Program at 406-444-3394 (jchaffee@mt.gov) or via the web at http://www.dphhs.mt.gov/PHSD/family-health/ficmr/ficmr-index.shtml.

**References:**

1. Guyer B, et al. Annual summary of vital statistics – 1998. Pediatrics 1999; 104:1229-1246.
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